

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

Please cancel Claims 31-38; amend Claims 1, 2, 4-6, 9-11, 13-17, 20, 21, 24-26 and 28-30; and add new Claims 39 and 40 as follows.

1. (currently amended) An air conditioning system for a vehicle having a passenger compartment, the system comprising:

a case defining an air passage through which air flows into the passenger compartment;

a cooling heat exchanger, in which refrigerant of a refrigerant cycle flows, the cooling heat exchanger being disposed in the air passage, for cooling air;

a heating heat exchanger, disposed at a downstream side of the cooling heat exchanger in an air flow direction, for heating air;

an air mixing door which is disposed to adjust a flow amount ratio between air passing through the heating heat exchanger and air bypassing the heating heat exchanger; and

a cold accumulator which is disposed between a downstream side of the cooling heat exchanger and an upstream side of the air mixing door in the air flow direction, to be the cold accumulator having therein a cold accumulating material that is sealed separately from the refrigerant of the refrigerant cycle, the cold accumulating material being cooled by cold air after passing through coming from the cooling heat exchanger.

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2. (currently amended) The air conditioning system according to Claim 1, wherein the case has ~~therein~~ a bypass passage through which air bypasses the cooling heat exchanger and the cold accumulator, the system further comprising

a bypass door which is disposed to adjust a flow amount of air passing through the bypass passage ~~while bypassing the cooling heat exchanger and the cold accumulator.~~

3. (original) The air conditioning system according to claim 1, wherein the cold accumulator and the cooling heat exchanger are integrally disposed to form an integrated structure.

4. (currently amended) The air conditioning system according to Claim 1, wherein:

the cold accumulator has a plurality of tubes each of which is made of a metal being cooled by the cold air, ~~and a cold accumulating material sealed in the tubes; and~~

the cold accumulating material is sealed in the tubes and has a phase change in accordance with a temperature change thereof.

5. (currently amended) The air conditioning system according to Claim 4, wherein the tubes of the cold accumulator are stacked ~~on~~ adjacent each other to define

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a cold air passage between adjacent tubes in such a manner that cold air from the cooling heat exchanger passes through the cold air passage in a wave shape.

6. (currently amended) The air conditioning system according to Claim 1, wherein:

the cold accumulator has a tube folded and bent in a serpentine shape to form a plurality of folded tube portions, ~~and a cold accumulating material sealed in the tube~~; and

the cold accumulating material is sealed in the tube and has a phase change in accordance with a temperature change thereof.

7. (original) The air conditioning system according to claim 6, wherein the cold accumulator further has a fin disposed between the folded tube portions.

8. (original) The air conditioning system according to claim 6, wherein a plurality of the tubes, each of which is folded and bent in a serpentine shape, are disposed to be connected integrally.

9. (currently amended) The air conditioning system according to Claim 1, wherein the cold accumulator has a plurality of tubes arranged in a direction and filled with a the cold accumulating material, and a fixing member disposed to fix both ends of each of the tubes.

10. (currently amended) The air conditioning system according to Claim 9,
wherein:

each of the tubes has a flat shape in cross-section;

the tubes are arranged so that a major direction of the flat shape of each tube
is along the air flow direction in the cold accumulator;

the fixing member has a plurality of recesses arranged to correspond to the
arrangement of the tubes; and

at least one side ~~ends~~ end of each of the tubes are fitted into ~~the recesses~~ a
respective recess of the fixing member, ~~respectively~~.

11. (currently amended) The air conditioning system according to Claim 1,
wherein:

the cold accumulator has at least a first cold accumulating portion and a
second cold accumulating portion; and

the cold accumulating material includes a first material sealed in the first cold
accumulating portion and a second material sealed in the second cold accumulating
portion.

~~the first cold accumulating portion has therein a first cold accumulating~~
~~material; and~~

~~the second cold accumulating portion has therein a second cold~~

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~~accumulating material different from the first cold accumulating material.~~

~~12. (original) The air conditioning system according to claim 11, wherein:~~

~~the cold accumulator has therein an inner partition member; and~~

~~the first cold accumulating portion and the second cold accumulating portion are integrally disposed to be defined by the inner partition member.~~

~~13. (currently amended) The air conditioning system according to Claim 11, wherein:~~

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~~the first cold accumulating material has a melting point higher than that of the second cold accumulating material; and~~

~~the first cold accumulating portion is disposed at an upstream side of the second cold accumulating portion in the air flow direction.~~

~~14. (currently amended) The air conditioning system according to Claim 1, wherein:~~

~~the cooling heat exchanger is an evaporator of a the refrigerant cycle having a compressor that is driven by an engine for traveling powering the vehicle, the engine being stopped when power of the engine for traveling of the vehicle is unnecessary.~~

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15. (currently amended) The air conditioning system according to Claim 1, further comprising:

a control unit for controlling temperature of air to be blown into the passenger compartment, wherein:

the control unit controls temperature of the cooling heat exchanger to a target cooling temperature;

a in a cold accumulation mode for performing a cold accumulation of the cold accumulating material in the cold accumulator, the control unit sets the target cooling temperature at an initial target temperature; and

when the control unit determines a finish of the cold accumulation of the cold accumulating material in the cold accumulator, the control unit sets the target cooling temperature to be switched from the initial target temperature to a predetermined temperature that is higher than the initial target temperature.

16. (currently amended) An air conditioning system for a vehicle having a passenger compartment, the system comprising:

a case defining an air passage through which air flows into the passenger compartment;

a cooling heat exchanger, in which refrigerant of a refrigerant cycle flows, the cooling heat exchanger being disposed in the air passage, for cooling air;

a heating heat exchanger, disposed at a downstream side of the cooling heat exchanger in an air flow direction, for heating air;

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a heating adjustment member which is disposed to adjust a heating capacity of the heating heat exchanger; and

a cold accumulator which is disposed between a downstream side of the cooling heat exchanger and an upstream side of the heating heat exchanger in the air flow direction, ~~to be~~ the cold accumulator having therein a cold accumulating material that is sealed separately from the refrigerant of the refrigerant cycle, the cold accumulating material being cooled by cold air ~~after passing through~~ the cooling heat exchanger.

17. (currently amended) The air conditioning system according to Claim 16, wherein the case has ~~therein~~ a bypass passage through which air bypasses the cooling heat exchanger and the cold accumulator, the system further comprising

a bypass door which is disposed to adjust a flow amount of air passing through the bypass passage ~~while bypassing the cooling heat exchanger and the cold accumulator.~~

18. (original) The air conditioning system according to claim 16, wherein the cold accumulator and the cooling heat exchanger are integrally disposed to form an integrated structure.

19. (currently amended) The air conditioning system according to Claim 16, wherein:

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the cold accumulating material is sealed in the tubes and has a phase change in accordance with a temperature change thereof.

A 20. (currently amended) The air conditioning system according to Claim 19, wherein the tubes of the cold accumulator are stacked on adjacent each other to define a cold air passage between adjacent tubes in such a manner that cold air from the cooling heat exchanger passes through the cold air passage in a wave shape.

21. (currently amended) The air conditioning system according to Claim 16, wherein:

the cold accumulator has a tube folded and bent in a serpentine shape to form a plurality of folded tube portions, ~~and a cold accumulating material sealed in the tube;~~ and

the cold accumulating material is sealed in the tube and has a phase change in accordance with a temperature change thereof.

22. (original) The air conditioning system according to claim 21, wherein the cold accumulator further has a fin disposed between the folded tube portions.

23. (original) The air conditioning system according to claim 21, wherein a plurality of the tubes, each of which is folded and bent in a serpentine shape, are disposed to be connected integrally.

24. (currently amended) The air conditioning system according to Claim 16, wherein the cold accumulator has a plurality of tubes arranged in a direction and filled with a the cold accumulating material, and a fixing member disposed to fix both ends of each of the tubes.

25. (currently amended) The air conditioning system according to Claim 24, wherein:

each of the tubes has a flat shape in cross-section;

the tubes are arranged so that a major direction of the flat shape of each tube is along the air flow direction in the cold accumulator;

the fixing member has a plurality of recesses arranged to correspond to the arrangement of the tubes; and

at least one side ~~ends~~ end of each of the tubes are fitted into the ~~recesses~~ respective recess of the fixing member, ~~respectively~~.

26. (currently amended) The air conditioning system according to Claim 16, wherein:

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the cold accumulator has at least a first cold accumulating portion and a second cold accumulating portion; and

the cold accumulating material includes a first material sealed in the first cold accumulating portion and a second material sealed in the second cold accumulating portion.

~~the first cold accumulating portion has therein a first cold accumulating material; and~~

~~the second cold accumulating portion has therein a second cold accumulating material different from the first cold accumulating material.~~

27. (original) The air conditioning system according to claim 26, wherein:

the cold accumulator has therein an inner partition member; and

the first cold accumulating portion and the second cold accumulating portion are integrally disposed to be defined by the inner partition member.

28. (currently amended) The air conditioning system according to Claim 26, wherein:

the first cold accumulating material has a melting point higher than that of the second cold accumulating material; and

the first cold accumulating portion is disposed at an upstream side of the second cold accumulating portion in the air flow direction.

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29. (currently amended) The air conditioning system according to Claim 16, wherein:

the cooling heat exchanger is an evaporator of a the refrigerant cycle having a compressor that is driven by an engine for ~~traveling~~ powering the vehicle, the engine being stopped when ~~power of the engine for traveling~~ of the vehicle is unnecessary.

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30. (currently amended) The air conditioning system according to Claim 16, further comprising:

a control unit for controlling temperature of air to be blown into the passenger compartment, wherein:

the control unit controls temperature of the cooling heat exchanger to a target cooling temperature;

in a cold accumulation mode for performing a cold accumulation of the cold accumulating material in the cold accumulator, the control unit sets the target cooling temperature at an initial target temperature; and

when the control unit determines a finish of the cold accumulation of the cold accumulating material in the cold accumulator, the control unit sets the target cooling temperature to be switched from the initial target temperature to a predetermined temperature that is higher than the initial target temperature.

31-38 (cancelled)

39. (new) The air conditioning system according to Claim 1, wherein,

the cooling heat exchanger is disposed to perform heat exchange between

the refrigerant flowing in the cooling heat exchanger and air passing through the cooling heat exchanger; and

the cold accumulator is disposed in the air passage downstream from the cooling heat exchanger in the air flow direction, to perform heat exchange between the cold accumulating material sealed in the cold accumulator and air passing through the cold accumulator.

40. (new) The air conditioning system according to Claim 16, wherein,

the cooling heat exchanger is disposed to perform heat exchange between the refrigerant flowing in the cooling heat exchanger and air passing through the cooling heat exchanger; and

the cold accumulator is disposed in the air passage downstream from the cooling heat exchanger in the air flow direction, to perform heat exchange between the cold accumulating material sealed in the cold accumulator and air passing through the cold accumulator.